R E M A R K S

Claims 13-16 were rejected under 35 USC 103 as being obvious in view of the combination of previously cited USP 4,286,458 ("Alexander"), previously cited USP 3,245,279 ("Baker"), and newly cited USP 4,095,323 ("Silvestri"). This rejection, however, is respectfully traversed, and reconsideration of this application is respectfully requested.

According to the present invention as recited in independent claim 13, a hand-held power nut runner is provided which comprises a housing with a rotation motor, an output shaft, and a reduction gearing connecting the motor to the output shaft.

As recited in claim 13, the reduction gearing comprises a plurality of planetary gearing stages having a common ring gear supported in the housing, and each one of the planetary gearing stages includes a sun gear, a planet wheel carrier, and a plurality of planet wheel units engaging the ring gear and the sun gear.

In addition, as recited in claim 13, each of the planet wheel units of at least one of the planetary gearing stages comprises two axially spaced spur gears fitted to a common spindle that is rotatively journalled relative to the planet wheel carrier via a needle bearing.

Still further, as recited in claim 13, one of the two axially spaced spur gears is rigidly secured to the common

spindle, and the other one of the two axially spaced spur gears is supported on the common spindle via a wringing fit for self alignment with the rigidly secured spur gear, thereby evenly sharing a load between the two axially spaced spur gears (during operation of the hand-held power nut runner).

The Examiner continues to assert that Alexander and Baker teach the claimed power nut runner of the present invention, but acknowledges that they do not disclose the structure recited in claim 13 whereby one of the two axially spaced spur gears is rigidly secured to the common spindle, and the other one of the two axially spaced spur gears is supported on the common spindle via a wringing fit for self alignment with the rigidly secured spur gear. The Examiner has relied on newly cited Silvestri for these features.

In particular, the Examiner asserts that column 2 of Silvestri discloses "a transmission comprising adjacent spur gears 94/96, wherein the first spur gear 94 is rigidly secured to a common spindle (integral with the spindle), while the second spur gear 96 is rigidly secured to the common spindle via a wringing fit." (Page 3 of the Final Office Action.)[1]

[1] Silvestri does not disclose a spur gear 94. The Examiner appears to be referring to first stage gear 84 and second stage pinion 96 as being "adjacent spur gears 94/96."

It is respectfully pointed out that the Examiner's own language contradicts itself. The Examiner contends that "the second spur gear 96 is rigidly secured to the common spindle via a wringing fit" (emphasis added). However, the gear 96 is either rigidly secured on the spindle, or it is supported on the spindle by a wringing fit. It cannot be both.

In fact, the Examiner's first phrasing is correct - the gear 96 is rigidly secured. According to column 2, lines 61-62, of Silvestri, "Gears 84 and 96 are electron beam welded together to form a cluster" (emphasis added).

Thus, there is no wringing fit between the spur gear 96 and the spindle to act as a load sharing mechanism during normal operation of the gearing. In more detail, Silvestri discloses a method for obtaining an improved load sharing between two spur gears on a common spindle by initially grinding the two spur gears separately, and at a first assembling stage, fitting the spur gears on the spindle with a "transition fit" or "easy fit" between the shaft of one gear and the bore of the other. See column 2, lines 54-56, and column 3, lines 22-25. This step obtains as good an alignment as possible between the two spur gears and, hence, a favorable load sharing. Then, the "other" spur gear is "welded to make a compact cluster." See column 2, lines 61-62. In other words, the "interference fit" described at column 2, line 60, is merely a preliminary step for positioning before the final product

is obtained. Silvestri does not provide for any mobility between the spur gears and the spindle during normal operation.

Silvestri describes at column 3 that the welding area is annealed so as to be weak enough to yield to a ten percent overload at a pre-use self-alignment procedure, thereby accomplishing a proper alignment and an equal load application on the two spur gears. During this process, the stress on the annealed welded area is caused to exceed the yield point "and there is a permanent torsional deformation of all gears." See column 3, lines 3-6. In addition, Silvestri discloses that "[t]his one cycle results in hardening the welded area designated as 134 so that subsequent loading and actual operation will not exceed the apparent yield strength." See column 3, lines 8-11. Still further, Silvestri discloses at column 3, lines 30-37, that the one cycle operation results in "work hardening of the welded area" and "repositioning of the teeth permanently."

With the arrangement described by Silvestri, after the overload work hardening procedure of the gearing, the gear cluster (84,96) is rigid and is <u>not</u> capable of adapting to torsional deflections of a planet wheel carrier that occur during operation, which is the functional aim of the wringing fit arrangement of the claimed present invention.

Thus, while Silvestri may disclose using an "easy fit" during an initial spur gear alignment procedure, the assembled

gear cluster in its final state is completely rigid and is not able to provide for any self-aligning and adaptation to an equal load sharing between the two gears during production use.

The Examiner asserts that it would have been obvious to combine the teachings of Alexander, Baker and Silvestri to "employ a wringing fit as a means of securing a spur gear to the common spindle in order to provide a reliable means to attach the gear to the spindle while saving parts." It is respectfully submitted that this assertion is not reasonable in view of the actual teachings of Silvestri explained above.

It is respectfully pointed out, moreover, that the purpose of the spindle/spur gear arrangement of the claimed present invention is not to accomplish a secure and part saving gearing design, but to provide a spur gear arrangement suitable for a small size high load gearing in which not only have the bearings been removed from the spur gears themselves to a common spindle bearing, but an optimal load transfer is provided for under all future stress situations of the gearing by having one of the spur gears rigidly secured to the spindle and the other spur gear supported on the spindle via a wringing fit. In contrast to the device of Silvestri, the spur gear arrangement of the claimed present invention is able to share load stresses between the two spur gears equally notwithstanding any torsional deflections occurring in the planet wheel carrier under heavy load.

The Examiner also asserts on page 3 of the Final Office Action that "using a wringing fit would have been obvious to one of ordinary skill in the art because the technique for attaching gears to spindles via wringing fit is a known technique that yields predictable results." However, the Examiner has not provided any evidentiary support for this obviousness rejection. In fact, none of the cited references teach or fairly suggest the feature of the present invention whereby one of the two axially spaced spur gears is rigidly secured to the common spindle, and the other one of the two axially spaced spur gears is supported on the common spindle via a wringing fit.

Moreover, in contrast to the unspecified "predictable results" that the Examiner refers to without explaination, the structure of the claimed present invention achieves an advantageous effect of evenly sharing a load regardless of torsional deflection of the planet wheel carrier. The arrangement of the two spur gears of each planet wheel unit according to the claimed present invention offers a new approach to coping with the problem of spur gear stress, and opens up a new way of downsizing planet gearings in power tools where small outer dimensions are required and heavy loads are to be transferred. Indeed, the structure of the claimed present invention guarantees that neither of the two spur gears is exposed to a heavier load than the other, regardless of

deflections of the planet wheel carrier or the surrounding ring gear. The result is a small, very strong, planet wheel gearing.

Accordingly, it is respectfully submitted that the disclosure of Silvestri does not fairly support the Examiner's interpretation of this reference.

It is respectfully pointed out, moreover, that the rejection of the claims relies on the combination of a reference relating to a power tool (Alexander), a reference relating to a helicopter drive gearing (Baker), and a reference relating to a turbine-gear-train (Silvestri) that is probably intended for some kind of vehicle.

These disparate references are not fairly combinable to achieve the hand-held power nut runner recited in the claims of the present application. One of ordinary skill faced with the problem of downsizing a planet gearing while also making the small planet gearing cope with high loads would not have had reason to turn to the (big) helicopter drives or turbine-gear-trains of Baker and Silvestri, where the physical dimensions are of little importance for finding applicable solutions.

In view of the foregoing, it is respectfully submitted that the present invention as recited in independent claim 13 and claims 14-16 depending therefrom clearly patentably distinguish over Alexander, Baker, and Silvestri under 35 USC 103.

Allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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